Claims 1 - 25: (Cancelled)

26. (New) A solution process for polymerizing one or more α-olefins of formula CH_2=CHR, wherein R is H or a C_1-C_{18} alkyl radical, wherein the solution process produces a polymer soluble in a reaction medium, comprising:

- continuously polymerizing in a liquid phase an α-olefin in presence of a catalyst system comprising a transition metal compound to obtain a polymeric solution comprising a polymer in a reaction medium; and
- then mixing in one or more mixing stages said polymeric solution with an aqueous mixture comprising one or more organic compounds having at least one hydroxy or epoxy group, said aqueous mixture having a dynamic viscosity at 30°C higher than 50 cP.

27. (New) The process according to claim 26, wherein said α-olefin is butene-1.

28. (New) The process according to claim 26, wherein said polymeric solution comprises a mixture of polybutene-1 and butene-1.

29. (New) The process according to claim 26, wherein said polymeric solution is obtained at a temperature ranging from 65 to 85°C.

30. (New) The process according to claim 26, wherein said

polymeric solution is obtained at a pressure ranging from 8 and 40 bar.

31. (New) The process according to claim 26, wherein said polymeric solution is obtained in one or more continuously stirred tank reactors.

32. (New) The process according to claim 28, wherein said concentration of polybutene-1 is less than 35% by weight.

33. (New) The process according to claim 28, wherein said concentration of polybutene-1 ranges from 10 to 30% by weight.

34. (New) The process according to claim 28, wherein said polymeric solution further comprises up to 20% by weight of another α-olefin based on said butene-1.

35. (New) The process according to claim 28, wherein said polymeric solution further comprises from 0.5 to 10% by weight of another α-olefin based on said butene-1.

36. (New) The process according to claim 26, wherein said polymeric solution comprising a temperature ranging from 65-85°C and a dynamic viscosity ranging from 1000-80000 cP is mixed with said aqueous mixture.

37. (New) The process according to claim 26, wherein said aqueous mixture comprises a dynamic viscosity higher than 90 Cp at 30°C.

38. (New) The process according to claim 26, wherein said aqueous mixture comprising at least one organic compound having at least one hydroxyl or epoxy group is prepared in a separated vessel at a temperature ranging from 25-45°C before mixing said aqueous mixture with said polymeric solution.

39. (New) The process according to claim 26, wherein said aqueous mixture comprises at least one organic compound selected from polyalcohols, hydroxyesters, alkyldiethanolammines, and polyepoxydate oils.

40. (New) The process according to claim 39, wherein said aqueous mixture comprises at least one alkyldiethanolammine of formula R-N $(CH_2CH_2OH)_2$, wherein R is a C_{12}-C_{18} alkyl radical.

41. (New) The process according to claim 40, wherein said alkyldiethanolammine is in a molar fraction in said aqueous mixture ranging from 0.1 to 0.4.

42. (New) The process according to claim 26, wherein said catalyst system comprises a Ziegler-Natta catalyst comprising a Ti-based compound as a solid catalyst component and an Aluminum alkyl compound as an activator.

43. (New) The process according to claim 26, wherein said aqueous mixture and Al are in a molar ratio higher than 2.0.

44. (New) The process according to claim 43, wherein said molar ratio ranges from 2.5 and 4.0.

45. (New) The process according to claim 26, wherein said polymeric solution and said aqueous mixture are mixed in one or more mixing tanks placed in series.

46. (New) The process according to claim 26, wherein said polymeric solution and said aqueous mixture are mixed in a single deactivation apparatus equipped with a sequence of mixing stages.

47. (New) The process according to claim 46, wherein said single deactivation apparatus comprises a stirring shaft comprising from 2 to 20 impellers.

48. (New) The process according to claim 46, wherein said mixing stages are formed along said stirring shaft of the single deactivation apparatus, said mixing stages being produced by rotating each impeller.

49. (New) The process according to claim 47, wherein said impellers comprise radial blades connected to said stirring shaft, said radial blades producing a radial flow within each said mixing stage from rotating said impellers.

50. (New) The process according to claim 46, wherein said polymeric solution and said aqueous mixture are continuously fed into said single deactivation apparatus through an inlet and said polymeric solution and said aqueous mixture flow slowly through said sequence of said mixing stages.

51. (New) The process according to claim 26, wherein

downstream from said mixing in at least one mixing stages, said polymeric solution and said aqueous mixture is passed to a separation step, wherein said polymer is separated from any unreacted monomer, and said unreacted monomer is then recovered and re-circulated.

52. (New) The process according to claim 51, wherein said separation step is carried out in at least one volatilization chambers operating at a decreasing pressure.